

CHARTER  
OF  
THE UNION COAL COMPANY,

SITUATED IN  
SOMERSET COUNTY, PENNSYLVANIA,

WITH A DESCRIPTION OF  
**The Coal and Iron Mines,**  
AND  
**OTHER MINERALS.**

ACCOMPANIED BY MAPS, PROFILES AND SECTIONS.

BALTIMORE:  
PRINTED BY JOHN W. WOODS.

1853.





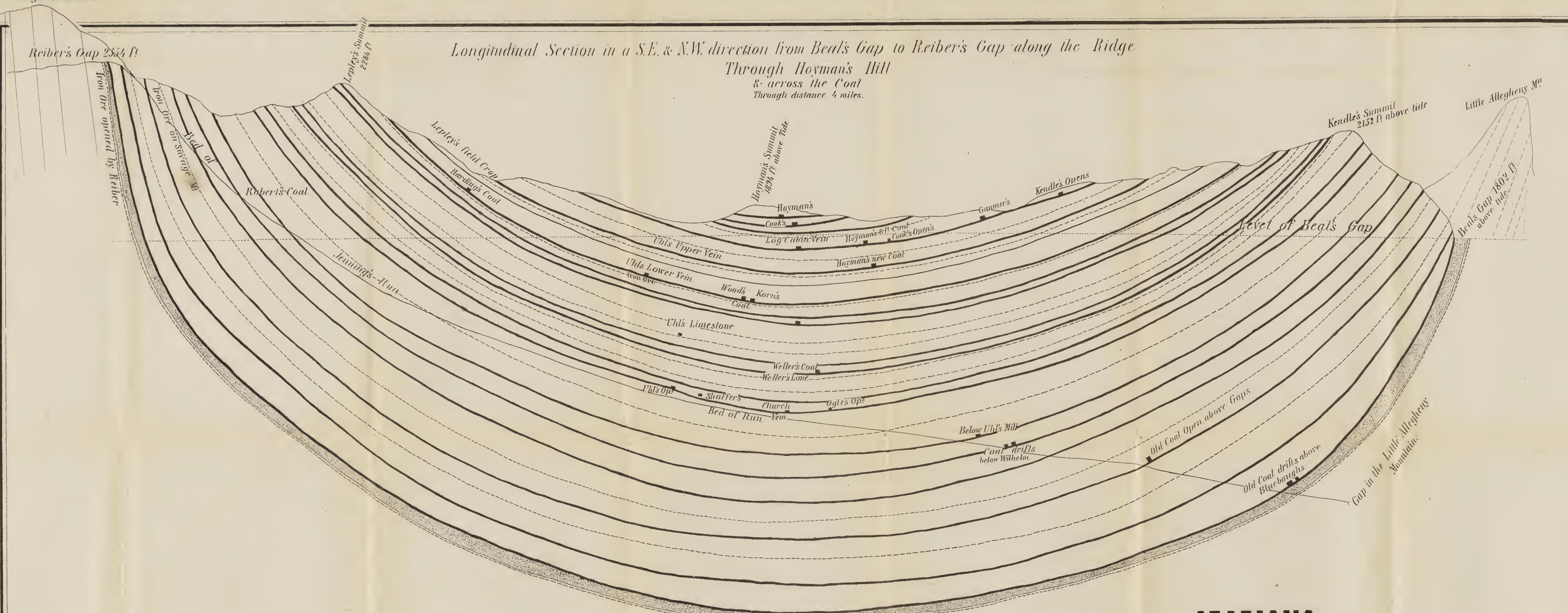
WILLIAM SIDES, SURVEYOR.

34 Second Street

*Savage Mountain*



Savage Mountain



Compiled from the Geological Surveys  
made by Professor W. R. Johnson A. M.

WILLIAM SIDES  
Land Surveyor &c.  
54. Second st. Baltimore.

LEVEL OF TIDE WATER

Illustrative of the Geological Character & Mineral Beds of the  
**SAVAGE MOUNTAIN COAL TROUGH**  
in  
**SOMERSET Co. PENNSYLVANIA.**

Lith. by A. Hoens & Co. Balt.

VERTICAL SECTION at Hoyman's Summit.					
Description	Veins	Thickness	Description	Veins	Thickness
Hoyman's Summit	1		Limestone	21	6 Ft.
Supposed Georges Creek Coal	2	10 Ft.	Savage Vein Coal	22	4 Ft.
Coal	3	20 In.	Coal	23	2 Ft.
Coal	4	6 Ft.	Coal	24	3 Ft.
Iron Ore	5	20 In.	Limestone	25	2 Ft.
Coal	6	4 Ft.	Coal	26	3 Ft.
Hoyman's Vein Coal	7	8 Ft.	Parker Vein	27	2 1/2 Ft.
Uhl's Upper Vein C.	8	4 Ft.	Fire Clay	28	3 Ft.
Iron Ore	9	18 In.	Bluebaugh Vein	29	3 Ft.
Coal	10	5 Ft.	Slab Vein	30	3 Ft.
Coal	11	2 Ft.	Coal	31	18 In.
Iron Ore (yields 60 p. C.)	12	20 In.	Big Vein Iron Ore	32	4 Ft.
Limestone	13	6 Ft.	Small Vein Coal	33	
Coal	14	8 In.	Great Conglomerate Rock		
Coal	15				
Ore	16				
Fire Clay	17	6 Ft.			
Shaffer Vein Coal	18	30 In.			
Hardin Vein Coal	19	18 In.			
Rock Vein Coal	20	26 In.			
Level of Tide Water					



MAP

Showing the Connection of the

# CUMBERLAND COALFIELD

WITH THE CANAL AND RAIL ROAD IMPROVEMENTS OF THE

Potomac

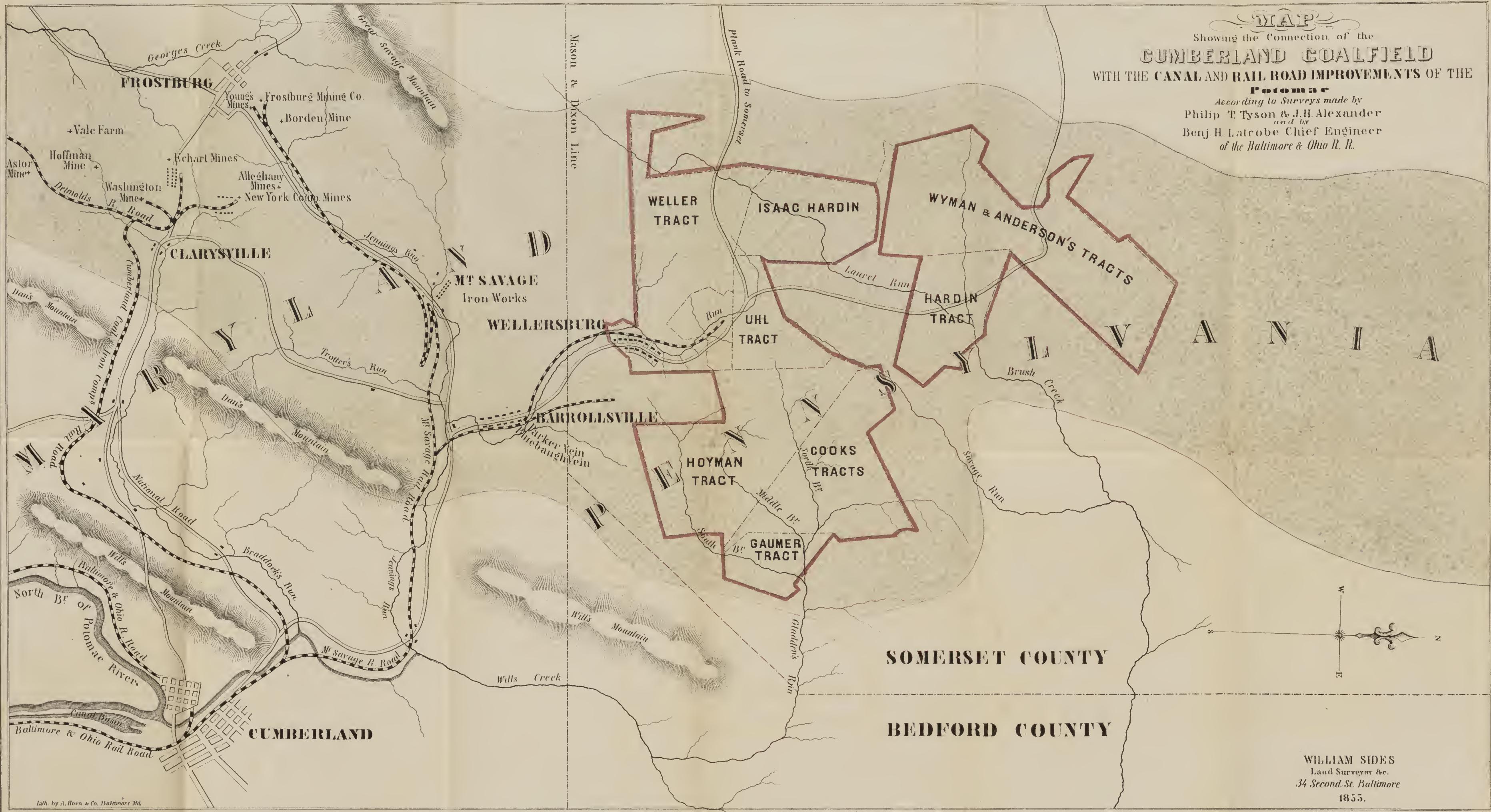
According to Surveys made by

Philip T. Tyson & J. H. Alexander

and by

Benj. H. Latrobe Chief Engineer

of the Baltimore & Ohio R. R.

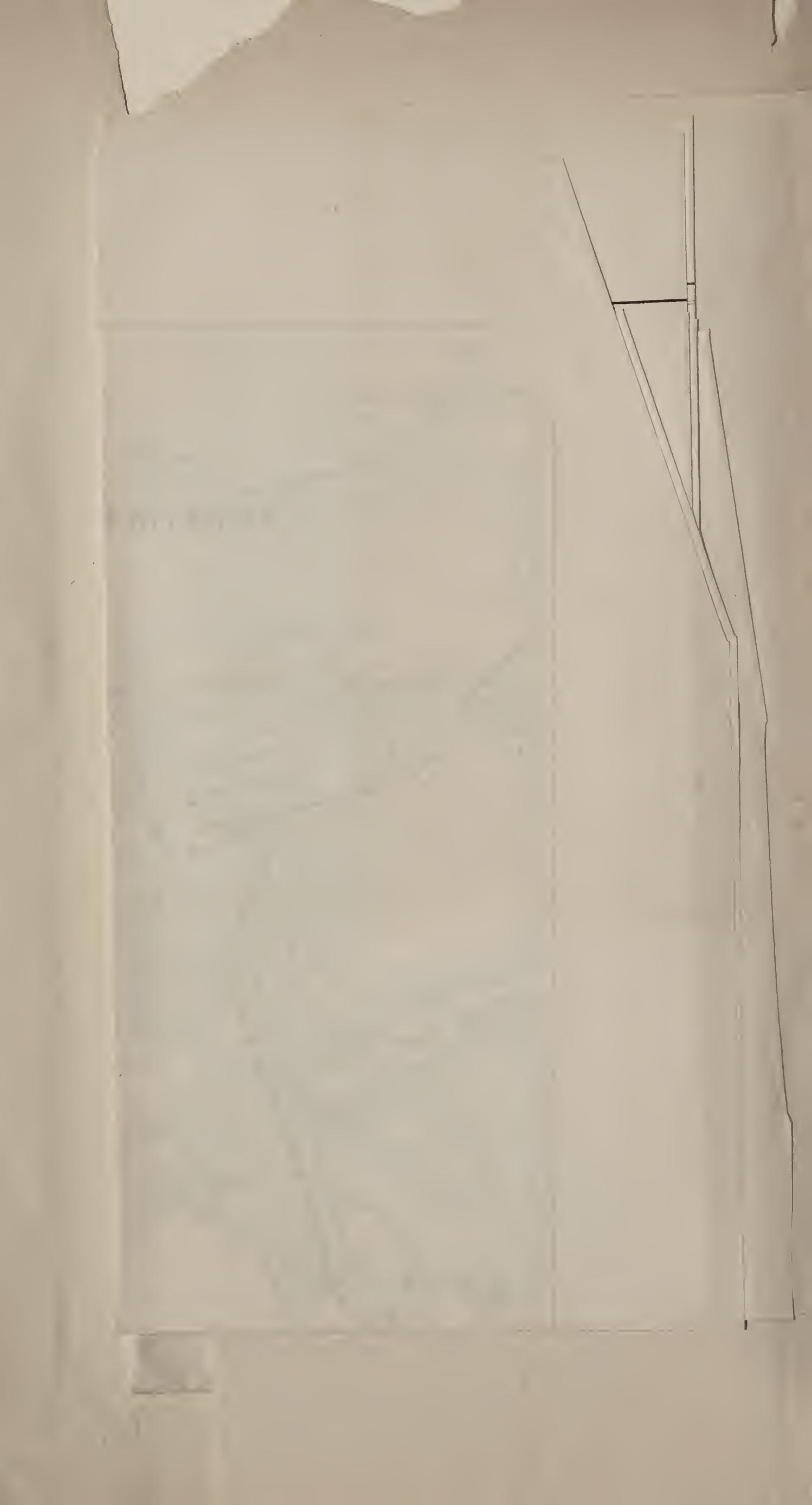


WILLIAM SIDES

Land Surveyor &c.

34 Second St. Baltimore

1855.



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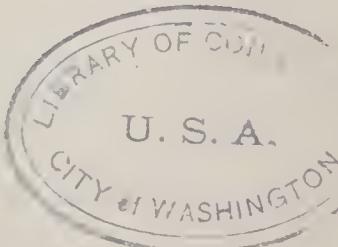
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PROSPECTUS  
OF  
THE UNION COAL COMPANY,  
OF  
Somerset County, Pennsylvania.

IN calling attention to this new object of investment, and fully aware of the many of a similar character which are already before them, the undersigned cannot but feel that some statements are necessary to infuse into the minds of others the confidence with which his own has been impressed, in regard to the plan submitted for their consideration, before he could reasonably expect either to attract their attention, or induce them to invest their means. He would therefore briefly say, that, he has only been induced to enter into this new project, after a careful personal examination of all the lands it is proposed to purchase: and a close comparison of the Report of Professor Johnson, with the facts therein stated, to which frequent reference will be made, it was impossible to escape the conviction that in point of location, mineral wealth, facility of working and transportation, these lands have a decided advantage over any that have come under his observation—he feels justified in making this assurance, knowing that it is not made on slight or untenable grounds, but upon facts that will bear any test to which they may be subjected—the position of these lands compact and in one body, in the immediate vicinity and surrounding the town of Wellersburg, with the plank road from

Cumberland to West Newton, passing through them, a very large portion of excellent cultivated surface land, with several hundred acres well-timbered, they possess a more than usual value for mountain land, independent of the coal, iron, limestone and fire-clay, with which they abound—added to which their proximity to market being only 9 miles from Cumberland, with a Rail Road completed to within one and a half miles of the mines. Without detaining you with any further observations, it is only necessary to place the facts before you, to lead your mind to the same conclusion to which the undersigned himself has arrived, that as an investment, it is difficult to find one more justly entitled to your attention.

CHRISTIAN KEENER, *Ag't.*

A BRIEF HISTORY--GEOGRAPHICAL POSITION--AND GEOLOGICAL VALUE AND RESOURCES OF THE LANDS INTENDED TO CONSTITUTE "THE UNION COAL COMPANY."

These lands are situated on the North-west fork of Jennings's run, and at the North-east end of the Frostburg Coal Basin, about seven miles from that place, and nine from Cumberland, immediately beyond the Maryland State line, in Somerset County, Pennsylvania. They lie within two miles of the railroad from Cumberland to Mt. Savage, and in such position as to make them the nearest Coal lands to the eastern market, and the easiest of access of all the lands belonging to the several Companies which have been formed for mining in that region, except a portion of the Parker Vein Co's lands. At no other point in this whole basin, has there been such a perfect development of the whole range of strata, which are here cut through from top to bottom, exposing within a range of two miles, all the different veins of Coal, Iron Ore, Limestone and Fire Clay, in such way as to allow of their being worked by horizontal drifts.

And owing to this circumstance it was here that the first discoveries of Coal in this celebrated basin were made, which led to their further development. Fifty years ago some of these veins were explored for mining purposes, and at a very early date coal was taken out, and hauled to Cumberland in wagons, and thence conveyed down the Potomac in arks and boats to the armory at Harper's Ferry and to Georgetown, and were pronounced a very superior article.

Of late years public attention has not been called to this quarter, and these lands have hitherto escaped the notice of capitalists for several reasons. In the first place attention has been almost exclusively directed to Alleghany County, Maryland, as containing the great body of coal land in this basin, while in fact, the most valuable part of this basin extends some two or three miles into the State of Pennsylvania.

In the next place the most valuable of them have been locked up for more than twelve years, in the estates of the late Hon. Charles Ogle and Joshua F. Cox, Esq. by whom they were purchased *because of their great mineral wealth*, at the very commencement of mining operations in this quarter, about the years 1836 and 7, in prospect of the early completion of the Chesapeake and Ohio Canal to Cumberland, and its continuation thence to the Ohio. And in expectation that this improvement was shortly to be finished, a Charter was procured from the Legislature of Pennsylvania, under the name of "*The Alleghany Coal Company*," at the session of 1838-9. A geological survey and exploration was made by Walter R. Johnson, A. M., Professor of Chemistry and Natural Philosophy in the medical department of Pennsylvania College, Philadelphia, accompanied by an elaborate report; since this report, many recent mineral discoveries of great value have been made, and facilities of getting to market, opened by the completion of "*The Chesapeake and Ohio Canal*," and The Baltimore and Ohio Rail-road to Cumberland, and its lateral branches reaching within one and a half miles of this property: While Professor Johnson's analysis of the coal and ores furnish an amount of information seldom to be met with; the accuracy of which report, has been tested and confirmed by recent examinations and explorations.

Mr. Ogle, at whose expense the survey was made, did not live to hear the result. The report came out after his death, which occurred in May, 1841. This circumstance and the delay attending the settlement of his estate, prevented any immediate disposition of these lands. The subsequent death of Mr. Cox, the other interested party, threw additional embarrassments in the way, until within the last two years, when this property, with several additional tracts of great value, became concentrated in the hands of the present proprietors, who have now concluded to put them into a Joint Stock Company to be called "*The Union Coal Company*," for the speedier accomplishment of which, a supplementary act was passed at the recent session of the Legislature of Pennsylvania.

## GEOLOGICAL CHARACTER OF THESE LANDS.

With reference to the Geological Character of the formation existing in this part of the basin, Professor Johnson in his report, commencing on page 8, says:—It is,

“ In all its leading features entirely similar to that found in other bituminous coal regions, both of the old and new world. It is a secondary formation, reposing in a trough or canoe-shaped cavity, between two upheaved ridges which run nearly parallel to each other in a direction from north-east to south-west; and consequently the strata which are inclined towards a central north-east and south-east line dip from one of these ridges, (the Savage mountain,) towards the south-east, and from the other, (Little Alleghany mountain,) they dip towards the north-west. In the central line, the position of the strata becomes, of course, for a short distance, nearly horizontal, and as we recede from this line they are seen to be more and more highly inclined to each other. The evidences of the

true character of the two ridges, that of up-curved portions of the stratification, were abundantly presented to view at the several gaps in these ridges, which I was enabled to visit; and on both sides of the coal field I traced the rock formation to points where it again became inclined *from* the central line of the coal trough in question.

Thus, in passing through the gap in the Little Alleghany mountain, which affords a passage to the waters of Gladden's run, I was enabled to observe at Compt's old mill-dam, an inclination S. 75 degrees, E. 81 degrees; while at Mattinger's shop higher up the stream, the inclination is N. 45 W. 85 degrees. Between this point and Emerick's mill, we find successively dips in the same direction, 43 and 36 degrees. At Emerick's mill, where the conglomerate rock is found in place, and a little above which, a bed of coal is opened, the inclination is still north-west, but the angle has diminished to 22 degrees. At Daniel Hoyman's, on the road which ascends the south branch of Gladden's run, the slate rock has a dip N. 38 W. of 9 degrees; and at Baker's place, N. 28 W. 8 degrees. At Gaumer's big vein it is N. 15 W. 5°. These last three observations appear to favor the supposition that the ridge between the waters of Gladden's and Jenning's runs, is in fact saddle-shaped, dipping into the valleys of the streams, as well as towards the centre of the trough, as already mentioned.

At the mouth of Jenning's run, the rocks were observed to dip N. 45° W. 80°.

At a crossing of Jenning's run, below the junction of the north and south forks, the dip was found to be N. 51° W. 65°. On the red shale rock some distance below the conglomerate, N. 40½ W. 17°; from this point to Uhl's mill, the inclination of the strata cut through by the stream appears to diminish gradually, until at the latter point it is N. 45 W. 4½ degrees.

Some additional facts were observed with respect to the inclination of the rocks, on the flank of the Little Alleghany, particularly north of Beale's Gap, where the conglomerate standing high above the other members of the coal series, probably on account of its greater degree of durability, has an inclination N. 45 W.  $60^{\circ}$ . At Beale's Gap also, the sandstone above the conglomerate dips N. 50 W.  $33^{\circ}$ ; but having passed from this point over the edges of several of the lower beds of coal and there interposed rocks, towards the synclinal axis or bottom of the trough, we perceive the formation to be gradually becoming more and more nearly horizontal, until we reach the rounded hill near the house of Henry Hoyman, which seems to repose in the centre of the trough, and to contain some higher members of the original formation than are met with in any other part of the trough over which my lines of survey extended. From the base of this central bluff we advance towards the north-west, up the flank of the Savage mountain, over strata, at first only moderately inclined, and find, as we proceed, still further evidences of the saddle-shaped figure assumed by the strata, constituting the ridge.

Thus we have on the south-westerly side of the ridges at Hardin's old and new openings, a dip S. 8 W.  $6^{\circ}$ , instead of S. $45^{\circ}$  E., as we might expect from the general bearing of the mountain ranges and of the main axis of the coal-trough. On the other hand, above Daniel Lepley's, on the Gladden's run side of the ridge, the inclination is S. 60 E.  $24^{\circ}$ —then S. 55° E.  $15^{\circ}$ —and not far below, on the Jenning's-run side of the slope, S. 30 E.  $15^{\circ}$ ; S. 35 E.  $17^{\circ}$ . All these observations are within a few rods of each other, and indicate that the waters of the two runs, have, in excavating their channels, more than 1000 feet deep into the formation, been directed by other than accidental circumstances, in reference to the courses which they have respectively traced. It would be highly satisfactory

to witness a direct development of all members of the series above water-level in this part of the basin, by means of trenches opened upon the steep sides of the slope, exposing the edges of the strata. In *the absence of this method of research*, I have sought to connect, in as unexceptionable a manner as possible, the points where openings do exist; and thus to construct a section which may serve as a general guide, *subject to such corrections as future and more minute examinations shall render necessary.*

“An inspection of the accompanying section will show that the lower bed of coal, opened near the point where the south-fork of Jennings’s run, (which comes from near Frostburg,) joins the north-fork, must, in the centre of the basin, be found even below the level of the town of Cumberland, and that it must be at least 1,300 feet below the top of the Central Hill, still resting in the middle of the trough near Hoyman’s house. The old coal openings at the forks are only three hundred feet above the mouth of Jennings’s run; and as the latter point is known to be 684 feet above tide, we have at this point, a coal bed 984 feet above tide-water, capable of being mined by horizontal drifts, and presenting a breast of at least 4,000 feet, on the slope of the little Alleghany mountain, before it would reach the outcrop, where it was observed near Beal’s gap.” The advantages of this position may be appreciated by the fact that many lands rich in minerals, are frequently rendered utterly valueless for the want of a proper synclinal inclination of the veins, which in working drain themselves.

“From an actual examination of the position of each bed it will be observed that about twelve different strata of coal have *already* been ascertained to exist, and that of these not less than six or seven are susceptible of profitable working, and have actually been wrought to supply the demands, either of the immediate neighborhood, or of the public armory at Harper’s

Ferry," and further on he adds, "from my own observation in the higher beds of the formation, I am led to the belief that the total amount of workable coal in the formation does not fall short of thirty feet."

Yet since that time there has been many more veins discovered, and the total amount of workable coal known to exist, cannot fall far short of double the first estimate; instead of 12 different strata, some 6 or 7 of which are workable, there are more than 20, some 10 to 12 of which at least are susceptible of being profitably worked.

The similarity of the coal found in all the veins, makes the following analyses of those opened at the time by Professor Johnson, all that is necessary, to understand their composition and character.

#### ANALYSES OF COALS.

No. 1. The first sample analyzed was from the eight feet bed, opened not far from H. Hoyman's place, at the centre of the trough, and near the highest part of the dividing ridge, between the waters of Jenning's and those of Gladden's run. This coal has a rather open structure, and jet black color, or occasional iridescent tints, with portions of alternate bright and dull black surface. The surfaces of deposition are well marked, and the two sets of sines or cleats, are, in the sample before me, at angles of about  $105^{\circ}$  and  $75^{\circ}$ , with each other, giving a rhombic structure in that direction.

The specific gravity of this coal is 1.3432.

Heated to $220^{\circ}$ Fah. it loses	1.2 per ct.
When fully coked, it yields of water and other condensable matter,	4.0     "
And of uncondensable gas,	16.8    "
It contains of earthy matter,	8.1     "
And of solid carbon,	69.9    "
	—
	100.00

The ashes are dense, of a reddish gray tint, and obviously contain a considerable proportion of oxyd of iron, and probably a small per cent. of manganese; not enough, however, it is believed, to interfere, in the least, with the use of this coal for smelting iron.

No. 2. This specimen of coal was taken from the new opening on Uhl's upper vein. Its thickness, measured at an old drift at some distance from the point where this new opening was made, was found to be 4 feet 9 inches, including a ply of slate of variable thickness, from 9 to 12 inches. The new opening had not, at the time of my visit, been so effectually opened as to enable me to determine exactly its thickness, but it is, doubtless, equal to that observed in the other opening.

The specific gravity of this coal is 1.3195.

Heated to 220° Fah. it lost,	2.00	per ct.
And when fully coked it gave—in combined		
water and other condensable vapors,	1.04	"
And of uncondensable gas,	16.08	"
'The earthy matter, bright buff or fawn-colored		
ashes, is	4.05	"
Carbon,	75.75	"
		100.00

No. 5. This coal is from Hoyman's eight feet bed, but a different ply from the sample given in No. 1. The color is nearly jet black, shining, structure rhomboidal, foliated, and occasionally exhibiting local contortions of the grain. The surfaces of superposition are strongly marked; and the main slines, or cleavages, are inclined to those surfaces, in an angle of about 30 and 150 degrees.—Its specific gravity is 1.363.

At 300° it parts with moisture to the amount of	1.1	per ct.
And in coking loses in addition, of volatile matter,	17.2	"
It contains of earthy matter,	10.2	"
And of unvolatilizable carbon,	71.5	"
		100.00

The ashes are of nearly as light a color as those from hickory wood, but with a slight reddish tinge, are bulky, and appear to contain but little metallic oxyd.

The coke is not voluminous, and has a steel-like color and brightness. No sulphur was detected in the course of this analysis, though traces of sulphuret of iron do occur in some plies of this bed of coal.

The following table exhibits the coals arranged in the order above suggested.

Coals arranged in the order of their specific gravities, with the proximate constituents of each.

No.	Locality.	Sp. Gr.	Wat. expell-ed at 300°.	Bitu-men.	Ashes.	Carbon.	Pro. carb. to 1 of bitumen.
2	Hoyman's new opening.	1.3195	2.0	18.2	4.05	75.57	4.162
8	Weller's four feet vein.	1.321	1.4	18.5	11.00	69.10	3.735
1	Hoyman's old bed.	1.3432	1.2	20.6	8.10	69.90	3.393
6	Hoyman's six feet bed.	1.362	1.3	18.5	11.66	68.54	3.705
5	Hoyman's eight feet bed.	1.363	1.1	17.2	10.20	71.50	4.157
4	Schaeffer's new opening.	1.370	1.3	17.5	10.50	70.70	4.040
3	D. Korn's old opening.	1.386	1.4	18.7	11.44	68.46	3.661
7	Uhl's seven feet vein.	1.388	2.7	16.8	12.06	68.44	4.073
9	Meeting-house vein.	1.480	1.2	17.5	12.79	68.56	3.918
10	Weller & Hardin's.	1.491	1.4	16.2	16.04	66.36	4.096
	Mean results.	1.382	1.5	17.97	10.68	69.73	3.894

Omitting the minor fractional divisions, it may be stated that the coal of this formation, contains in 100 parts, by weight,

one and a half parts of hygrometric moisture, eighteen of bitumen, ten and a half earthy matter, and seventy of carbon. It may also be stated in general terms, that the volatile combustible matter bears to the carbon, the proportion of one to four.

The mean specific gravity of the coal being 1.382, the weight of one cubic yard will be 2747 pounds; and each acre of land on which the eight feet bed is found, will accordingly, contain in that bed, 15,800 tons. The six feet bed will contain nearly 11,800 tons per acre.

From this, and the number of coal veins, it would be no exaggeration to estimate the whole number of tons per acre, at 4 or 5 times the yield of this vein, and yet large as this would make the value of the whole, it is not overrated, even without taking into consideration the minerals of other descriptions known to exist and underlying the whole body of this land.

"To the above general remarks, I may add, that, the richness of this coal formation in argillaceous carbonates of IRON and in LIMESTONE, is such, as to warrant the establishment and prosecution of IRON WORKS on the most extensive scale which the necessities of the country shall require. When this, and similar coal districts of our country, come to be duly appreciated, there will, I conceive, be a total cessation of the ruinous practice of contracting debts abroad for supplying this important article of consumption at home, an article, which there appears to be as little need of bringing from abroad into the United States, as there is of importing raw cotton from India."

### IRON ORE.

The manufacturing of Iron swells into importance as an object of investment, that, at first glance, it would hardly be thought to possess, if we will only bestow a passing thought on the 10,000 miles of projected rail-roads, and the wear and

tear of those in present use, besides the many new purposes for which *Iron* is growing into daily use.

The great abundance and richness of the Iron Ore in this part of the Basin make it invaluable, as a location for the manufacture of Iron, and for which there is no place in the United States with superior advantages, and perhaps none equal. Professor Johnson, says in his report, page 29—"The varieties of Iron Ore found on this property, their abundance and richness, warrant the *highest expectations* as to the value of this district for Iron manufactures."

This estate is situated nearly on the ridge which divides the waters flowing east and west, and by means of Rail Roads and Rivers has the choice of both markets. The *Pittsburg Post*, speaking of the IRON TRADE, says :

"The Iron Manufacturers of this country have a sure demand before them of nearly \$300,000,000 for fabrics to be turned out from their manufactories—a demand that will require all, and more than all their capacity to supply fast enough. The calculations upon which the statements are based is the extent of railroad now in course of construction. With one hundred tons per mile, single track, it will require 1,300,000 tons of iron rail to complete the thirteen thousand miles of railroad either in progress or which will be in progress ere long, including the Pacific railroad. At \$50 per ton, this would require an outlay of \$65,000,000 for single tracks alone. But many of these roads will be double tracks, besides turnouts, &c. Then follows a vast outlay for cars, locomotives, and other iron works about such roads, to say nothing of ocean steamships, iron buildings, machinery, &c., will give, an almost unlimited demand for iron."

It has lately been announced both in this country and in England, that great improvements have been discovered in the process of manufacturing iron from the ore, by which the operation is much simplified and economised. The ore and fuel of this Company are well adapted to their new process, and advantage can be taken of all improvements. The National Intelligencer says that an important announcement in England, and which is eliciting great attention, is a development of new principles in *Iron Metallurgy*. The general opinion of those who are competent to judge, says the *Mining Journal*, is that the invention and discoveries referred to, will open

an entirely new era in the manufacture of iron, not only with regard to its various manipulations, but to the construction and arrangement of apparatus also. If half these rumors be correct, the iron trade will indeed be revolutionized.

We copy from the *Cleveland Herald*, of recent date, the following :

**BAR IRON.—IMPORTANT DISCOVERY.**—Messrs. Davis & Co., of Cincinnati, (Ohio,) have become interested with the owners of Hilton's patent process of making wrought iron directly from the ore, with wood or mineral coal at a single heat, and have put the matter to a practical test with the most favorable results. They have put up a furnace, forge and rolling mill in one room, and the first attempt produced iron, though all the hands, with one exception, had never seen such a furnace. The furnace and puddling oven are connected; when the ore is melted it flows into the oven, and by tapping a few inches above the oven hearth the slug or drop flows out. The iron is bailed and put under the trip hammer, made into blooms and prepared for rollers; all done but with a small quantity of fuel. Owing to low water in the Ohio, Messrs. Davis & Co. have so far used a very inferior quality of black sand stone ore, yielding only about 15 per cent. of iron, and usually refused by foundry men, as unprofitable.

The ore is pulverised and mixed with 20 per cent. of carbon—common bituminous coal—and then put into air chambers prepared for it, which are also heated by stone coal. In the puddling oven it is also heated by stone coal to a white or welding heat, and made ready for bailing. No charcoal or anthracite, heretofore considered as essential, is used. Nine blooms of 70 pounds each, averaging one in fifteen minutes, required but three bushels of stone coal to the bloom. They are now turning out about  $2\frac{1}{2}$  tons of the best quality of blooms every 24 hours at a cost of \$12,50 per ton in Cincinnati.

The iron manufactured by the new process has been subjected to the severest test, such as making into horse shoe nails, nuts, &c., and proves to be as good quality as the best of blooms brought to the Cincinnati market. The above particulars of this important invention to the iron interests are obtained from the communication of J. Greer to the *Dayton Journal*, and Charles Cist to the *Cincinnati Enquirer*. Both have visited the works and witnessed the process, and Mr. C. says :

"The great advantages claimed in this process are the cheapness with which the iron is made, the cost estimated is but \$22 to \$23, where the ore and coal is near at hand—the use exclusively of the common bituminous coal—the uniform good quality of the iron—and compared with a blast furnace, costing say \$30,000, which usually produces nine tons pig iron, worth, say \$30 per ton, the daily products would be \$270.—The same investment, say \$30,000, will build twenty of these furnaces, allowing \$15,000 for machinery, houses, &c., which twenty furnaces, at the poorest yield ever yet made, will produce 40 tons blooms daily, worth, at least, \$60 per ton when pig iron is worth \$30, making \$2,400 daily product from a \$30,000 investment against \$270 product at a blast furnace, and the comparative cost of labor, nothing compared with increased product. The works are all contained in a building 30 by 50 feet, and the estimated room required for twenty furnaces and necessary machinery, is a single shed 140 feet long and fifty feet wide."

Without detaining our readers any longer on this part of our subject, we call their attention to Professor Johnson's

### ANALYSES OF IRON ORES.

We select out of several analyses, the following—viz.

No. 1. It is very compact in structure, of a bluish grey color, gives a splintery fracture, and sometimes develops in its surfaces of separation, the existence of vegetable fossils.

Its specific gravity is 3.7644.

At a temperature of 320° Fah. it loses	1. per ct.
When strongly calcined, it loses in addition	28.4 "
And yields of pig metal	42.2 "
Earthy matter and oxygen	28.4 "
<hr/>	
	100.

The iron obtained in this assay was grey, soft, and tough.

No. 2. Next in the order of superposition, appears to be the  $6\frac{1}{2}$  feet bed of iron ore, in bands and balls, as found near the top of Savage mountain. The sample analyzed was taken from near the bottom of the bed, out of a compact band of ore, 12 inches thick. The dip of this bed is, S. 50° E. 17°.

This ore is a light blue impure carbonate, inclining in some parts to reddish brown, owing, probably, to the formation of some peroxide, by exposure to the atmosphere. Its fracture is rough and splintery.

Its specific gravity at 63° Fah. is 3.3957.

Heated to 350° it loses	0.5 per ct.
When calcined at a white heat, it loses in addition,	28.0 "
It yields of pig iron,	39.2 "
And contains of earthy impurities,	24.1 "
And of oxygen,	8.2 "
<hr/>	
	100.

The pig metal yielded by this ore is dark grey, soft, tough, and exhibits various dark crystalline facets.

The cinder is brittle, opake, whitish, and abounds in cavities.

No. 6. This specimen was from the coal opening on the Uhl tract, known as Uhl's upper vein. It lies 44 feet below the level of Beal's Gap, and consequently 421 feet above the last mentioned locality.

The ore has a deep chocolate brown color, yellow without; it is of a compact texture, but contains occasional cavities, filled with argillaceous matter.

Its specific gravity is 3.4704.

Heated to 320° it loses	4.3	per ct.
At a white heat it loses in addition,	11.5	"
It contains of iron	58.94	"
"         oxygen	25.26	"
	100.00	

The ore is reduced at once to metallic malleable iron on the exterior, when in contact with charcoal, at the reducing temperature; and this outer shell contains magnetic oxide of iron, apparently nearly pure.

It seems probable that it would be most advantageously worked with an argillaceous or calcareous ore, containing a larger portion of earthy matter.

This ore is a hydrated peroxide of iron, and is evidently the shell derived from the decomposition of carbonated argillaceous ball ore.

Tabular view of the Iron Ores above described.

<i>No.</i>	<i>Locality.</i>	<i>Sp. Gr.</i>	<i>Wat. expelled at 300°.</i>	<i>Loss by calcin- ation.</i>	<i>Yield in pig metal.</i>	<i>Earthy matter, &amp;c.</i>	<i>Oxygen.</i>	<i>Remarks.</i>
1	Reiber's Gap, Savage mountain.	3.7644	0.1	28.4	42.2	28.4	8.	Iron, grey, soft, tough.
2	Cath. Wyman tract, Sav. mount.	3.3957	0.5	28.	39.2	24.1	8.2	Iron, dark grey, soft, tough and crystalline.
3	Upper part of same bed.	3.077	0.5	20.6	32.8	37.	9.1	Iron, light grey, moderately hard, but tough.
4	From same tract, but dif. opening.	3.3179	0.6	24.4	36.1	33.8	5.1	Iron, white and brittle.
5	Weller tract new opening.	3.2646	0.5	29.5	32.3	31.1	6.4	Iron, dark grey, soft, granular.
6	Uhl's upper vein.	3.4704	4.3	11.5	58.94		25.26	Iron, malleable.
7	Cook's farm.	3.2764	0.5	30.5	26.7	29.5	12.8	Iron, dark grey, crystalline.
8	Hoyman's Hill.	3.4069	0.5	28.4	35.2	28.2	7.7	Iron, mottled, fine-grained, tough.
	Mean	3.3716		25.16	37.93	30.3		

From the mean specific gravity of these ores, it appears that one cubic yard will weigh 5685 lbs. or a little more than two and a half tons. It also appears that the average yield in pig metal is a trifle short of 38 per cent. In practice it will probably be safe to calculate on taking three tons of these ores to make one ton of pig iron.

In numbers, 1, 2, 4, 5, 7, and 8 of the assays, it is manifest that the iron was almost wholly in the state of a carbonate of the protoxide, since the mean amount of carbonic acid in those six samples was 28.2 per cent., from which the calculated quantity of iron, supposing it to have been proto-carbonate, would be 35.69 per cent.; whereas, it was by experiment, 35.28. The slight deficiency is accounted for, in describing the results of the seventh analysis.

It will be observed that only one of the specimens yielded a white and brittle metal. Indeed, out of many series of assays which I have made on the iron ores from various localities, I do not recollect to have met with a more satisfactory set of results, from any of the carbonated ores of our coal formations.

"The adaptation of the situation to the manufacture of iron, appears to be complete. The ore itself is very abundant, and of excellent qualities. The coal is of the class known as "dry bituminous," yielding a moderate per centage only of volatile matter, and a coke which is not so bulky as to choke the furnace, or prevent the application of the raw coal to the manufacture of iron, even without the labor and expense of coking. *This remark is not hazarded as a mere conjecture.* The coal of this basin, has, within a distance of ten or twelve miles of the company's property, been actually applied to the manufacture of iron, (and since within 3 miles at Mount Savage Iron Works,) both with and without the process of coking. Having visited the works at Lonakoning, I can bear testimony to the fact, that iron of excellent quality was made from the ore, coal and limestone found on George's creek, and having before me samples of all the materials used at that locality, I can discover no superiority in them, over those found on this property.

All these veins and beds of iron ore, varying from 20 inches to 6 feet, are found to run with as much regularity and certainty, as any of the coal veins, they run in horizontal seams parallel with them, so that their value may be readily estimated by the number of acres they underlie. The southern end of this whole basin has been found comparatively destitute of ore, for the reason, that the veins appear to lie in a wedge shape, gradually declining from their extraordinary thickness at this point, to thinner seams in the southern portion of the basin.

## LIMESTONES.

"The possession of an abundant supply of limestone, interstratified with the coal and iron ore beds of the Savage mountain coal-trough, is a circumstance of great interest, in relation particularly, to the manufacture of iron. The limestone found at the "Big Spring," in a bed of 9 feet in thickness, on the Hoyman tract, has a specific gravity of 2.709, yields excellent lime of a yellowish white colour, and by calcination loses 36.4 per cent of its weight. After calcination, this limestone is completely soluble in acids," (p. 41.)

## COST OF MANUFACTURE.

*Estimate of the cost of one ton of pig iron.*

3 tons of ore—say \$1 per ton, delivered at the furnace,	\$3 00
Flux material, (limestone,) " " "	50
3 tons of coal <i>a</i> \$1 " " "	3 00
Workmen, wear and tear of furnace, &c.,	4 00
	<hr/>
	\$10 50

So that every ton of metal manufactured may be put into market at \$12.50, which is \$2 for transportation on the estimated cost.

In view of this estimate of the cost of Pig Iron, under the present process, \$12.50 per ton—the favorable situation of these lands in regard to transportation—the various advantageous sites for furnaces—the richness and abundance of Iron ore, with all the crude materials on the spot, there can be no doubt that the manufacture of Iron can be carried on in the Pennsylvania portion of the basin, with more profit than in any other part of this coal field, or we may safely add, in this country: and we leave the reader to draw his own inferences and make his own calculations whether a more profitable business could be entered into, if managed with ordinary prudence, than the erection of furnaces at the cost stipulated above, that would yield so large a product in so short a time.

CHRISTIAN KEENER, *Agent.*



CHARTER OF THE  
ALLEGHANY COAL COMPANY.

[Now THE UNION COAL COMPANY. See Supplementary Act.]

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SECTION 1. *Be it enacted by the Senate and House of Representatives of the Commonwealth of Pennsylvania, in General Assembly met, and it is hereby enacted by the authority of the same,* That James Armstrong, jr., George Weller, John Mong, Jacob Myers, (G. S.) Samuel W. Pearson, Alexander B. Fleming, Jonathan Knepper, and Daniel Baird, and their associates, successors and assigns, be and they are hereby constituted a body corporate and politic, by the name, style and title of "The Alleghany Coal Company," for the purpose of mining coal, and for the transacting of the usual business of companies engaged in the mining, transporting to market, and selling of coal, and the other products of coal mines. And the said corporation, by the said name, is hereby declared and made capable in law to sue and be sued, to plead and be impleaded, to have a common seal, and the same to alter and renew at pleasure, to make rules and by-laws for the regulation and management of the said corporation, consistent with the laws of the United States, and of this Commonwealth, and generally to do and execute for the well being of said company, whatever shall lawfully pertain to such bodies politic : *Provided*, That nothing herein contained shall be considered as in any way giving to said company any banking privileges, but they shall be exclusively confined to the operations pertaining to the business aforesaid, according to the true intent and meaning of this act : *And provided also*, That each stockholder shall be liable in his individual capacity for the debts, and performance of all contracts entered into by the said company, to the amount of the balance unpaid on the stock of said company.

SECTION 2. The said company shall have the right to hold either by purchase or lease, not exceeding two thousand acres of land at any one time, the whole to be within the townships of Southampton and Greenville, in the county of Somerset, in the commonwealth of Pennsylvania, and the same, or any part thereof, to sell, or otherwise dispose of, as the interest of the company may require : *Provided*, That the said company may hold, as above, such lot or lots of land, not exceeding five acres, in any one place, as may be found convenient as places of deposit in the transportation and sale of the products of their mines.

**SECTION 3.** The capital stock of said company shall be and consist of three\* hundred thousand dollars, and shall be divided into six thousand shares, of fifty† dollars each; which capital stock shall only be employed in the holding and purchasing the lands aforesaid, with the improvements, if any thereon, and in constructing such other improvements, buildings, cars, boats, engines, and machinery, as may be necessary or useful for the mining, transportation, and sale of coal, and in the payment of such salaries, wages, and other expenditures, as shall be requisite for the purposes aforesaid, of the company; and the said stock shall be assignable and transferable, according to such rules as the board of directors shall establish.

**SECTION 4.** When the above named James Armstrong, jr., George Weller, John Mong, Jacob Myers, (G. S.) Samuel W. Pearson, Alexander B. Fleming, Jonathan Knepper, and Daniel Baird, and their associates, shall have subscribed the whole number of shares aforesaid, and actually paid and expended not less than fifteen per cent. of the capital, aforesaid, in purchasing lands, and in such other investments as are authorized by this act for the use of said company, the Governor, on due evidence thereof, shall, by letters-patent, under his hand, and the seal of the state, create and erect the said James Armstrong, jr., George Weller, John Young, Jacob Myers, (G. S.) Samuel W. Pearson, Alexander B. Fleming, Jonathan Knepper, Daniel Baird, and their associates, successors, and assigns, into one body corporate, by the name, style and title of "The Alleghany Coal Company.

**SECTION 5.** The affairs of the said company shall be managed by seven directors to be chosen annually from the stockholders. The first election shall be held in the borough of Somerset, county of Somerset, within thirty days after letters-patent aforesaid, shall have been issued, of which election, public notice shall be given by four or more of the corporators named in the first section of this act, at least two weeks prior thereto, in two or more newspapers printed in the county of Somerset, and the subsequent elections shall be held annually, at such convenient time and place as the directors shall determine, of which thirty days previous notice, shall in like manner be given by the president of said company, or by any five of the directors: *Provided*, That in the event of a failure to hold such election, the former directors may continue in office for a period not exceeding six months, or until such election shall be held.

**SECTION 6.** The election for directors shall be held by ballot, and each stockholder shall be entitled to vote according to the number of shares held by said stockholder, in the proportion following, that is to say; for each share, and not exceeding four shares, one vote; for every two shares above four, and not exceeding ten, one vote; for every four shares above ten, and not exceeding thirty, one vote; for every ten shares above thirty, and not

\* Five, see Supplementary Act.

† Twenty dollars each, see Supplementary Act.

## 25

exceeding one hundred, one vote; for every twenty shares above one hundred, one vote. No share shall confer a right of voting which shall not have been transferred at least three calendar months prior to the day of election, nor unless it be bona fide held or owned by the person in whose name it appears, in his own right, or in that of his wife, or for his or her sole use and benefit, or as executor or administrator, trustee or guardian, or in the right or for the use and benefit of some copartnership, society or corporation, of which he or she may be a member. And all votes by proxy, shall be on such terms and conditions as are prescribed by the act passed on the twenty eighth day of March, one thousand eight hundred and twenty, entitled "an act to regulate proxies."

SECTION 7. The directors shall, as soon as convenient after their election, choose one of their number as president, to serve for one year, they shall also have power to appoint as occasion may require, all other officers and agents of the company, and to supply vacancies in the board arising from death, resignation or otherwise, until the next annual election. At all meetings of the board, four directors shall form a quorum to transact business.

SECTION 8. The directors may, from time to time, call in on thirty days notice thereof, in at least two newspapers printed in the county of Somerset, such instalments on the stock of said company, as they may judge best, not exceeding twenty per cent. thereof, at any one time and place appointed, and if any instalment of the stock so called in, shall remain unpaid for the space of thirty days after the time so appointed, every such stockholder, or his or her assignee, shall, in addition to the instalment so called for, pay at the rate of two per centum per month, for the delay of such payment, and if the same and additional penalty shall remain unpaid for such space of time, as that the accumulated penalty shall become equal to the sums before paid in part and on account of such shares, the same shall be forfeited to the said company, and may be sold to any person or persons willing to purchase for such prices as can be obtained for the same, or in default of payment by any stockholder of any such instalment as aforesaid, the president and directors may, at their election, cause suit to be brought before an alderman or justice of the peace, or in any court having competent jurisdiction, for the recovery of the same, together with the penalty aforesaid. *Provided*, That no stockholder, whether an original subscriber or assignee, shall be entitled to vote at any election or at any general or special meeting of the said company, on whose share or shares any instalments or arrearages may be due and payable more than thirty days previously to the said election or meeting.

SECTION 9. Dividends of so much of the profits of the company, as shall appear to the directors advisable, shall be declared twice a year, and paid to the stockholders or their legal representatives on demand, at any time after the expiration of ten days after having been declared, but said

dividends shall in no case exceed the amount of net profits actually acquired by the company, so that the capital stock shall never thereby be impaired, and if any dividend shall be declared which shall impair the capital stock of the said company, the directors consenting thereto shall be liable in their individual capacities to said company, for the amount of the stock so divided, and each director present when such dividend shall be declared, shall be adjudged consenting thereto, unless he shall forthwith give public notice to the stockholders of the declaring of such dividend. **Provided**, That whenever the dividends shall exceed six per cent. per annum, the said company shall pay a tax of eight per cent. on all such dividends into the treasury of the state, for the purposes of education, and the president of said company shall annually in the month of January, transmit to the Legislature under oath or affirmation, a statement of the receipts and expenditures thereof, and of any dividends which may have been declared during the preceding year.

**SECTION 10.** It shall not be lawful for the said president, directors and company, nor any of their agents, nor any other person whatever employed by or under them, or any of them, for the purpose contemplated in this act, to enter upon any land which they shall deem necessary for the construction and completion of the said rail-road or rail-roads, or any part thereof, either by the making of any excavation or embankments, or for the mere purpose of searching for stone, earth or gravel, or for the felling of timber for the construction and completion of the said road or roads, until the rate of compensation for injury sustained or to be sustained by reason of the construction thereof, shall have been previously ascertained and paid, or the amount thereof secured in such a manner as shall prove satisfactory to the owner or owners of such land, which said compensation if the parties cannot agree thereon, shall be ascertained in the same manner as is prescribed and provided for in the fifteenth section of the act of the sixth day of April, one thousand eight hundred and thirty, incorporating the Middleport and Pine Creek Rail-road Company.

**SECTION 11.** Any legal process served on any agent or manager of said company, is hereby declared to be to all intents and purposes as valid as the same would have been if served on the president and directors thereof.

**SECTION 12.** The company hereby incorporated shall have power to construct rail-roads with one or more tracts from any point or points on their land, to the Maryland line, in the direction of Cumberland. Said company shall have the same powers and immunities, and be subject to the same terms and conditions that are provided for in the act to incorporate the Beaver Meadow Rail-road and Canal Company, and the supplements thereto. **Provided**, That the said company shall not prevent any person or persons, company or companies, hereafter incorporated, being the owner or owners of land bordering on the said rail-road or rail-roads,

or adjacent thereto from making lateral rail-roads, and to connect them with said rail-road or rail-roads, from their said lands, as the said person or persons, company or companies, may conceive necessary for the purpose of transporting their coal or produce upon said rail-road or rail-roads, subject to the payment of the same rates of toll now charged by the Minehill and Schuylkill Haven rail-road, by virtue of the sixth section of the supplement of their act of incorporation, passed on the twenty-third day of March, one thousand eight hundred and thirty-two, and that the turn-outs for such lateral roads shall be so constructed and kept as not to interfere with the use of the main road or roads, and all cars or wagons run upon the same, shall be subject to such rules and regulations as may be prescribed by the company, and be intended to keep the track of said road or roads, free and open for the uninterrupted passage of the cars of every person desiring to travel thereon.

SECTION 13. This act shall continue and be in force until the first day of May, in the year of our Lord, one thousand eight hundred and sixty-five. *Provided*, That it shall be lawful for the legislature at any time, to amend or repeal any of the foregoing provisions, and to rescind the powers hereby granted, in such manner however, that no injury may be done to the corporators.

WM. HOPKINS,  
*Speaker of the House of Representatives.*  
CHARLES B. PENROSE,  
*Speaker of the Senate.*

APPROVED—This twenty-fifth day of May, A. D. eighteen hundred and thirty-nine.

DAVID R. PORTER.

S U P P L E M E N T  
TO THE  
Charter of the Union Coal Company.

SECTION 1. *Be it enacted by the Senate and House of Representatives of the Commonwealth of Pennsylvania, in general Assembly met, and it is hereby enacted by the authority of the same,* That the name, style and title of the Alleghany Coal Company be changed and the same shall henceforth be entitled "*The Union Coal Company*," and in which name the books for subscription to the capital stock thereof shall be opened and the business of the company conducted.

SECTION 2. That the shares of stock of said company be reduced from fifty dollars to twenty dollars per share, the capital stock remaining the same as heretofore, but the said company shall have power if at any time it be deemed necessary, upon a vote of two-thirds of the stockholders being favorable thereto, to increase the capital stock of said company to an amount as they may deem advisable, not exceeding in the aggregate five hundred thousand dollars, and thereupon direct and receive an additional subscription thereto. *Provided,* That said Company shall pay to the State Treasurer, for the use of the Commonwealth, one per centum on the capital stock thereof in four equal annual payments, the first whereof, shall be paid within one year after the passage of this act.

SECTION 3. That the corporate privileges hereby granted, shall continue in force until the first day of May, one thousand eight hundred and sixty-five, and such parts of the act to which this is a supplement, as are hereby altered or supplied, be and the same are hereby repealed.

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SECRETARY'S OFFICE.

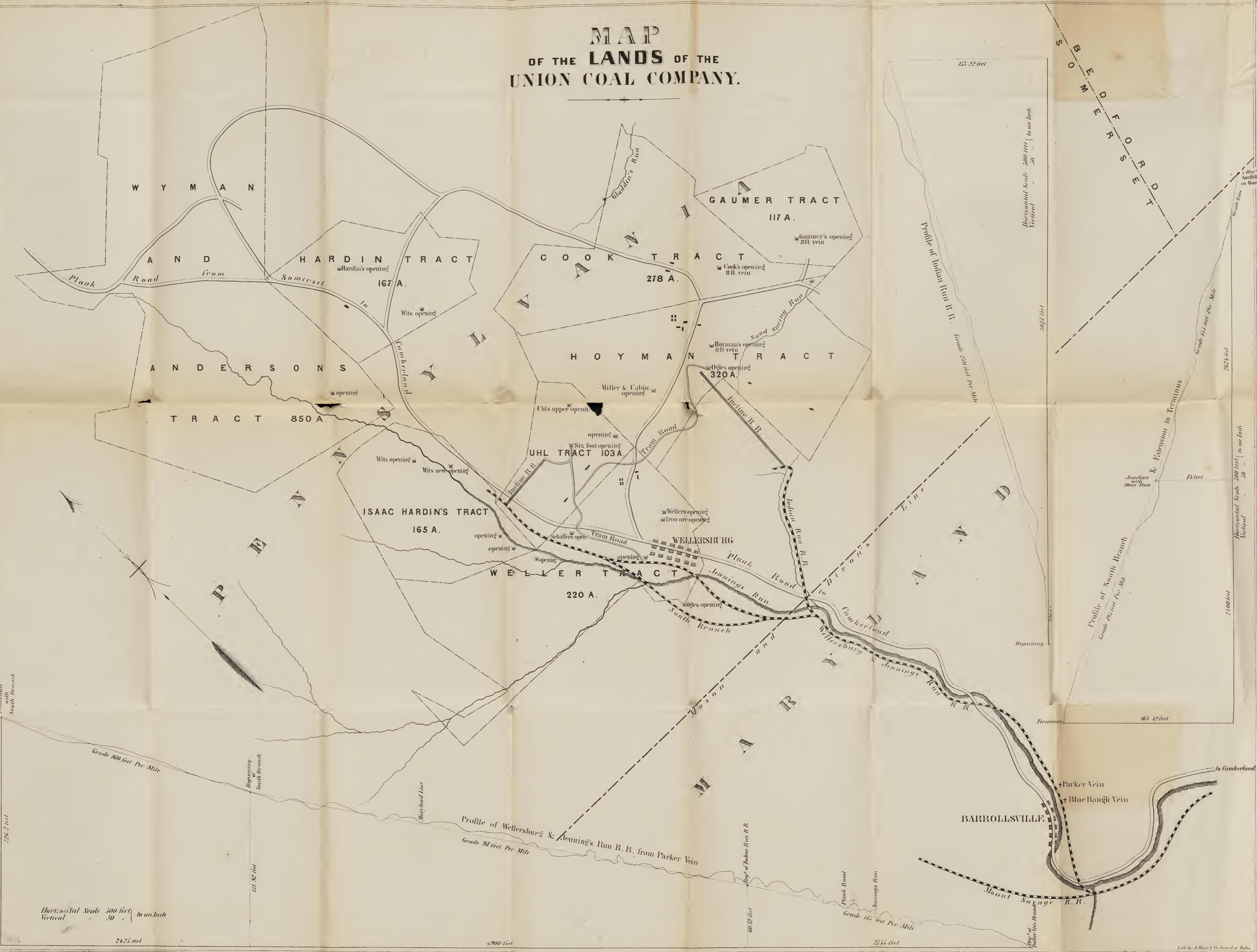
Pennsylvania, ss.

I DO HEREBY CERTIFY, That the foregoing and annexed is a true and correct copy of Sections one, two and three, of the Original Act of the General Assembly, entitled "A Supplement to an act to incorporate the Alleghany Coal Company, passed the 25th day of May, 1839, relative to tavern license in Bedford county; authorizing the Committee of George Beisheim, a lunatic, to make a deed." Approved the eighteenth day of April, A. D. one thousand eight hundred and fifty-three, as the same remains on file in this office.

IN TESTIMONY WHEREOF, I have hereunto set my hand and caused the Seal of the Secretary's Office to be affixed at Harrisburg, this fourth day of May, A. D. one thousand eight hundred and fifty-three.

E. S. GOODRICH,  
Dep. Secretary of the Commonwealth.

**MAP  
OF THE LANDS OF THE  
UNION COAL COMPANY.**



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